Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd \_\_\_\_\_

***Cellular Respiration Webquest***

**Background**

Cellular Respiration is one of the key ways a cell gains useful energy. It is the set of the metabolic reactions and processes that take place in organisms’ cells to convert energy from nutrients into ATP.

**Directions**

**Go to** <http://www.phschool.com/science/biology_place/biocoach/cellresp/overview.html> . You will be visiting concepts 1-6. Read the material found in each concept and answer the questions.

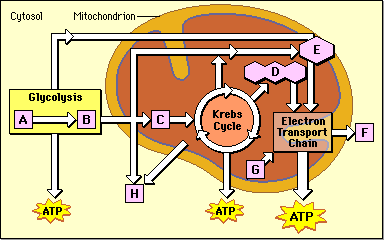
**Concept # 1 Overview of Respiration**

List the 3 metabolic processes that Cellular Respiration divides into**:**

In the absence of oxygen, respiration consists of two metabolic pathways: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Concept 1 Practice:**

Identify the Important Molecules Involved in Aerobic Respiration



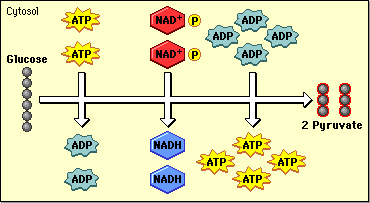
E. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
F. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
G. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
H. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
B. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
C. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
D. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Concept #2 Glycolysis**

In glycolysis, the 6-carbon sugar, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, is broken down into \_\_\_\_\_\_\_molecules of a 3-carbon molecule called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This change is accompanied by a net gain of 2 \_\_\_\_\_\_\_\_\_ molecules and 2 \_\_\_\_\_\_\_\_\_\_\_\_ molecules.

Where does glycolysis take place in the cell?



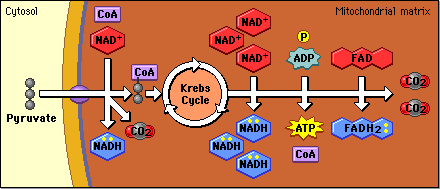
**Click on the Review (top right of page) Go through the animations of glycolysis.**

List the 4 important stages in glycolysis:

**Concept #3 Krebs Cycle**

The Krebs cycle occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ matrix and generates a pool of chemical energy (\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) from the oxidation of pyruvate, the end product of glycolysis.

Answer the following questions by using the diagram below:



What molecule made in glycolysis enters into the mitochondrial matrix?

How does pyruvate become acetyl-CoA?

What are the products of the Krebs Cycle?

**Click on the Practice and the Review (top right of page) Go through the animations of the Krebs Cycle**

**Concept #4 Oxidative Phosphorylation via the Electron Transport Chain**

Where is the ETC located?

How many ATP molecules are produced from 1 NADH?

How many ATP molecules are produced from 1 FADH2?

**Click on the Practice and the Review (top right of page) Go through the animations of the ETC.**

**Concept #5 Fermentation**

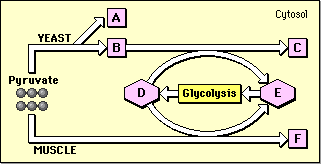
All cells are able to synthesize ATP via the process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In many cells, if oxygen is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, pyruvate is metabolized in a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

What is produced in Fermentation that will be used in glycolysis?

What are the two types of Fermentation? (Hint look at the diagram)

What is the term used when no oxygen is present?

**Concept 5 Practice:** Identify the Reactants and Products in Fermentation



A. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
B. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

D. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
E. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

F. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Concept #6 Glucose and Energy**

How many molecules of ATP can be produced from one glucose molecule in aerobic respiration?

**Concept 6 Practice:** Count the Number of High Energy Molecules Formed from One Molecule of Glucose

A. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

B. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

C. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

D. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

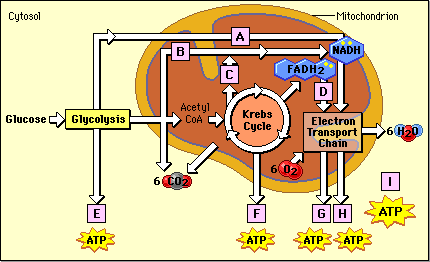
E. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

F. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

G. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

H. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_

I. Number of ATP: \_\_\_\_\_\_\_\_\_\_\_\_\_



**Go through Review/Practice for Glucose and Energy.**

**Take the Self Quiz (16 questions).**